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Technological Capabilities, Upgrading, and Value Capture in Global Value Chains: Local Apparel and Floriculture Firms in Sub-Saharan Africa

abstract

Many local firms in sub-Saharan African countries are failing to enter and upgrade in new manufacturing and agribusiness export sectors. This article argues that we need to look more closely at the costly, risky, and uncertain firm-level processes of building capabilities in order to understand this challenge. However, local firm agency is constrained and has to be situated in asymmetric structures that are determined by transnational interfirm relations in global value chains (GVCs) as well as the country and region in which local firms are embedded. The article presents a new framework for researching how firms build capabilities in GVCs, and demonstrates how it can be applied using the cases of apparel and floriculture export sectors in Ethiopia, Kenya, and Madagascar. The cases show that firms build specific capabilities linked to export strategies, leading to uneven capability-building, specific upgrading paths, and value capture trajectories. Variations in local firms' export strategies and success with those strategies are explained by differences in the financial capital, tacit knowledge, and social networks that they can leverage in building capabilities. The nature and extent of these intrafirm resources, especially in the early period of export industry development, are shaped by shared networks between local and foreign supplier firms, regional proximity to existing supplier countries, strategic interests of global buyers, and government industrial policy.

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Sub-Saharan African countries experienced steady growth from the mid-1990s to the mid-2010s, but very few of them have created competitive manufacturing industries and diversified their exports away from raw materials, and most still import the majority of their manufactured goods (United Nations Economic Commission for Africa 2016). Profound changes in the global economy since the mid-1980s, due to trade liberalization, financial deregulation, and changes in global business strategies along with innovations in transport and in information and communication technologies, resulted in the spread of global value chains (GVCs). However, locally owned firms in sub-Saharan African countries generally experienced marginalization and exclusion in these chains. They struggled to enter and remain competitive in most manufacturing and agribusiness export sectors, much less upgrade, and also faced challenges to produce for domestic markets in the context of trade liberalization (Gibbon and Ponte 2005; Kaplinsky 2005; Murphy and Carmody 2015; Whitfield et al. 2015; Newman et al. 2016). In order to understand why, it is crucial to assess lead firm strategies and interfirm governance dynamics in GVCs. This article argues, however, that we need to look more closely at the processes of building capabilities within local supplier firms as well as how these processes are shaped by GVC dynamics, regional contexts, and national policies.

The GVC and global production network (GPN) theoretical approaches focus on lead firm strategies and the implications for supplier firms, particularly in terms of upgrading and value capture (Gereffi et al. 2001; Henderson et al. 2002; Humphrey and Schmitz 2002; Gereffi, Humphrey, and Sturgeon 2005; Coe and Yeung 2015). A growing body of literature points to the difficulties for supplier firms to capture value in highly asymmetric GVCs (Bair and Werner 2011; Havice and Campling 2013; Mahutga 2014; Quentin and Campling 2018; Baglioni, Campling, and Hanlon 2019; Anner 2020; Durand and Milberg 2020). This literature demonstrates how lead firms' control over intangible assets and their governance practices allow them to put immense price pressure on suppliers along with demanding higher requirements, which limits the benefits for local firms from participating in GVCs and from economic upgrading, and thus also the space for social upgrading. These outcomes are

related to concentration at the lead firm level and high competition at the supplier firm level. If all supplier firms are upgrading at the same time, they will not escape competition but simply keep pace with competitors, with gains captured by lead firms (Kaplinsky and Morris 2001; Kaplinsky 2005; Knorrington and Pegler 2006).

Despite asymmetric global relations and outcomes, supplier firms have agency—even though it is constrained. Supplier firm participation in GVCs, upgrading paths, and the value capture that results from them is not only shaped by GVC dynamics but also by supplier firm strategies and the local and regional political economy contexts in which firms are embedded. There is an increasing literature on transnational first-tier suppliers that have developed a global presence, focusing on the strategies of these firms and how they influence GVC governance and value capture (Appelbaum 2008; Azmeh and Nadvi 2014; Raj-Reichert 2019; Sako and Zylberberg 2019). There is also an emerging literature that combines the GVC approach with the National Systems of Innovations literature, highlighting the role of different learning channels linked to GVCs and local innovation systems (Pietrobelli and Rabellotti 2011; Lema, Raboletti, and Sampath 2018). Additionally, literature critical of a linear upgrading concept demonstrates how supplier firms adopt diverse strategies to manage risk and capture greater value by mixing different upgrading and downgrading paths, and by diversifying participation in global, regional, and national markets (Pickles et al. 2006; Ponte and Ewert 2009; Tokatli 2013; Plank and Staritz 2015; Smith et al. 2016; Zhu et al. 2019). As Barrientos et al. (2016) point out, the growth of regional value chains in Africa increases the options of local supplier firms and allows for strategic diversification, potentially enhancing their bargaining position and providing opportunities for economic and social upgrading.¹ Ouma (2010) and Baglioni (2015) also show that within asymmetric power relations with global buyers, sub-Saharan African horticulture suppliers negotiated entry and participation in GVCs and used strategic diversification of marketing outlets as accumulation strategies.

This article aims to advance the literature on supplier firm agency by focusing on firm-level export strategies and processes of building capabilities, and the resulting upgrading paths and value capture trajectories. We do this by combining the conceptual and methodological tools of the GVC/GPN approaches with the technological capabilities (TC) approach. The TC approach emphasizes not only the importance of purposeful investments and efforts by firms in acquiring, adapting, and improving capabilities but also the costs, risk, and uncertainty involved in building capabilities. Morrison, Pietrobelli, and Rabellotti (2008, 4) advocate combining these approaches, arguing that we need to focus on “the endogenous process of technological capability development, on the specific firm level efforts and on the contextual factors enhancing and/or hindering this process.” There has been some scholarship combining these approaches, but it focuses on supplier firms that already have significant production capabilities (Kawakami and Sturgeon 2011; Hansen, Fold, and Hansen 2016). There is limited research on local supplier firms in lower-income countries just entering manufacturing and agribusiness GVCs. Hence, we focus on the capability-building processes of local supplier firms in lower-income countries in which the low initial capabilities of local firms are compounded by constraints external to firms that emanate from the country’s economic structure and nascent processes of industrialization.

This article provides a conceptual and methodological framework for operationalizing and measuring firm-level capabilities in terms of different categories and degrees of

¹ See also Morris, Plank, and Staritz (2016) on the potential of regional value chains in the African apparel sector.

complexity that are required for entering and upgrading in GVCs. The framework makes transparent the actual capabilities that are the basis for upgrading, and the risks and rewards involved in different upgrading and downgrading paths. To show how our approach can be applied, we use the empirical cases of apparel exports in Madagascar and Ethiopia and floriculture exports in Kenya and Ethiopia, where we conducted surveys with local export firms and interviews with industry experts, government agencies, and global buyers during several fieldwork visits between 2016 and 2019. These two sectors are among the most common new manufacturing and agribusiness export sectors in sub-Saharan African countries, and the countries we selected have a substantial share of locally owned firms.² Kenya and Ethiopia are the fourth and sixth largest floriculture exporters in the world and the major ones from sub-Saharan Africa, accounting for 7.7 percent and 2.4 percent of global exports, respectively, in 2017. Madagascar is the largest sub-Saharan African apparel exporter, and Ethiopia is number seven and quickly catching up. Even though total apparel exports from sub-Saharan Africa constituted just 0.8 percent of global apparel exports in 2017, it is the top manufacturing export sector.³

198 The cases show that supplier firms vary in the resources that they can leverage in building capabilities, which not only include financial capital but also tacit knowledge and social networks, and this variation is linked to firm ownership characteristics. We argue that variation in firms' resources influences the specific export strategies that firms adopt, and their strategies determine which capabilities they build and their upgrading paths and value capture trajectories. Intrafirm resources are also shaped by external factors such as regional proximity to existing supplier countries, strategic interests of global buyers, the extent to which foreign and local firms share social networks, and government industrial policy. In making this argument, we build on insights from the work of Smith et al. (2016) and Morris, Plank, and Staritz (2016) who examine the political economy of ownership structures and their implications for supplier firms' upgrading paths.

Conceptualizing How Supplier Firms Build Capabilities in GVCs

The TC approach stresses that technology is not readily transferable among firms and across countries because it consists of bundles of information that are both codified and tacit. The term *technological capabilities* refers to the technical, organizational, and managerial skills that firms need in addition to formal education and scientific knowledge in order to achieve the level of productivity that established firms have achieved and that set the market standard (Lall 1996). Firms can only acquire technological capabilities through purposeful and conscious investments in learning and the accumulation of experience in particular contexts, which involves learning by individuals as well as establishing collective routines and practices specific to an organization.

The TC literature provides a method for operationalizing the concept of technological capabilities through concrete descriptions of the capabilities demanded in particular sectors. Lall (1992) described three categories of capabilities that firms need:

² See Morris, Plank, and Staritz (2016) and Whitfield and Staritz (forthcoming) on the dominance of foreign-owned firms in the other top sub-Saharan African apparel exporter countries. Regarding floriculture, see Oqubay (2015).

³ These statistics are from the UN COMTRADE database, accessed in 2019.

investment (the skills needed to identify, prepare, obtain technology for, design, construct, equip, staff, and commission a new facility), production (the skills necessary for the efficient operation of a factory with a given technology, and its improvement over time), and linkages (the skills needed to transmit and receive information, skills, and technology from other organizations, which increase the productivity of the firm). He then identified three degrees of complexity within each category of capabilities, which range from simple and routine (experience based), adaptive and duplicative (search based), and innovative and risky (research based).

Lall's two classificatory principles provide important insights but need to be adapted to take into account the capabilities necessary to meet the requirements in specific GVCs. In addition to costs, quality, and reliability, other criteria shape lead firms' production and sourcing decisions, such as short lead times and high flexibility, which require differently organized production processes; nonmanufacturing capabilities, such as input sourcing, inventory management and stock holding, logistics, and financing; and compliance with safety, labor, and environmental standards (Kaplinsky and Morris 2001; Gibbon and Ponte 2005; Palpacuer, Gibbon, and Thomsen 2005). Lead firms often specify the exact characteristics of what their suppliers should produce, how they should produce it, and which input suppliers they should use. In this context, understanding lead firm strategies and being able to link with lead firms as well as input suppliers is important (Milberg, Jiang, and Gereffi 2014).

In addition to achieving the requirements to enter GVCs, firms can improve production processes, products, and functions in an effort to capture greater value, which the GVC/GPN literature refers to as upgrading (Humphrey and Schmitz 2002). While improving production efficiency (process upgrading) and increasing product quality (product upgrading) are often necessary conditions for remaining in GVCs, functional upgrading puts the focus on activities in value chains that potentially offer higher value added, including a variety of nonmanufacturing activities such as input sourcing, product development, design, branding, logistics, and distribution (Giuliani, Pietrobelli, and Rabellotti 2005). We argue that moving to new functions often requires deepening existing capabilities but also entails acquiring new capabilities that are not learned while being involved in the old function, and thus the functions that supplier firms pursue importantly determine what capabilities they need to build.

We combine the two classificatory principles introduced by Lall (1992) with the typologies of upgrading to generate a general capability matrix shown as Table 1. The vertical axis of Table 1 corresponds with functional upgrading, since moving up in the functions usually involves more complex capabilities. For the horizontal axis, we adapted Lall's categories of technological capabilities by differentiating between production process capabilities and product capabilities. We also created a separate end-market capability category in addition to the linkages capability category, given the centrality of relationships with lead firms in GVCs. Our matrix also takes into account the importance of linkages capabilities that are required to build stable links to other firms, industry experts, and public or private sector institutions, as well as investment capabilities that affect the scale, product mix, technology, and equipment selected.

As the literature critical of the upgrading concept points out, supplier firms do not necessarily pursue linear and unidirectional trajectories of upgrading, and upgrading does not necessarily lead to better outcomes for firms (i.e., value capture) (Schrang 2004; Pickles et al. 2006; Gibbon 2008; Ponte and Ewert 2009; Tokatli and Kizilgun 2010; Navas-Aleman 2011; Tokatli 2013; Plank and Staritz 2015; Smith et al. 2016). Supplier firms diversify organizationally and geographically, as a means to manage risk

Table 1

General Technological Capabilities Matrix

		Categories of Technological Capabilities				
		Investment	Production Process	Product	End Market	Linkages
Functions in global value chain	Function 1 (basic)*					
	Function 2 (intermediate)*					
	Function 3 (advanced)*					

* The elaboration of basic, intermediate, and advanced functions can include as many rows as necessary to capture real-world patterns of upgrading within specific GVCs.

and capture more value in highly competitive environments, and leverage participation in national and regional markets through strategic diversification (Ouma 2010; Baglioni 2015; Barrientos et al. 2016; Zhu et al. 2019). They may also specialize in particular products and end markets, including strategies to make their firm *irreplaceable* (Sako and Zylberberg 2019). Thus, the matrix in Table 1 captures that firms can move to new functions (changing or adding rows) but also deepen their capabilities within a specific function (row), and this can occur within only one category of capabilities and not necessarily across all capabilities in the specific function. The matrix presents a static picture of what it takes to be operating at different functions in GVCs, but it can be used to identify firms' capability-building and upgrading paths by asking how firms got to their current position and changes over the past years.

To conceptualize supplier firm agency in upgrading paths and value capture trajectories, we need to theorize how firms make decisions about investing in building capabilities. The TC literature emphasizes that the process of building capabilities is costly and risky, since it is uncertain if and when firms will be successful and hence recoup the costs (Khan 2019). This is particularly the case if firms are far away from the minimum capabilities required to achieve the productivity level, quality standards, and delivery speed of existing global suppliers in a particular node of a specific GVC, resulting in a large capability gap. Furthermore, while firms are putting in the effort to bridge the capability gap, they are generally not making any profit, and thus learning has a high cost, especially if tacit knowledge has to be brought from outside the country. Additionally, the size of the *prize* that firms can get if they are successful in building capabilities, and hence achieve competitiveness in the low nodes in manufacturing and agribusiness value chains that they typically enter, can be quite low in the current context of high global competition (see Khan 2013).⁴ The high learning costs and risk in the early period of export industry development and a small prize may lead to few local firms investing in entering new export sectors, especially when they are the pioneers and when there are other economic opportunities available in national and regional markets with higher profit/risk ratios.

However, local firms differ in the initial resources upon which they can draw to invest in building capabilities, which also shapes their likely success in acquiring capabilities and thus their profit/risk calculations. We argue that the resources that matter most are the ability to access finance, (foreign) tacit knowledge, and social networks. The TC literature emphasizes that tacit knowledge is the key to developing technical, managerial, and organizational capabilities. We add the importance of the

⁴ The size of the prize is the normal profit rate in a particular function, product, and end market, and thus varies depending on what is produced, how, and for whom.

social networks in which firms are embedded, since firms can use these networks to access finance and knowledge as well as to create linkages with foreign investors, global buyers, and input suppliers. Differences in social networks and hence in initial resources are related to local firm ownership characteristics, since ownership affects the possibility of accessing resources and particularly social networks. The focus on social networks is linked to theoretical arguments about the embeddedness of firms (see Hess 2004). Morris, Plank, and Staritz (2016) argue that the concept of embeddedness facilitates an analysis of how ownership relates to the economic activities of firms that focus on local, regional, and global relationships. In particular, diaspora investors typically have wider social networks that link to their country of origin, and these investors also have greater access to finance and knowledge, often through leveraging their social networks.⁵ Thus, they can draw on more resources with which to bridge the capability gap and thus are willing to take the risk and can finance the learning cost.

The strategies of lead firms and first-tier foreign supplier firms in GVCs affect the opportunities of local firms to extend their resources depending on the network and territorial embeddedness of these lead firms and foreign suppliers. The nature of the network and territorial embeddedness of lead firms and foreign suppliers in turn are linked to their ownership characteristics as well as their corporate strategic interests. Regarding foreign supplier firms, shared social networks with local firms and the strategies of regional investors are important. When the owners of foreign firms and local diaspora-owned firms have the same ethnicity, it facilitates the creation of personal relations and trust, and thus foreign firms are more likely to allow local firms to access knowledge and contacts through their networks. For example, ethnic Chinese business networks knitted together the export manufacturing success and the rise of highly capable local firms in Taiwan, Hong Kong, Singapore, China, and parts of Southeast Asia (So, Lin, and Poston 2001; see also the review in Bräutigam 2003). Foreign firms whose country of origin is geographically close to the host country are often more territorially embedded in the host country. This plays out in more interaction with actors in the host country, including local firms, business associations and government agencies, and a more fluid division of labor and functions between their head offices and foreign factories (Morris, Plank, and Staritz 2016). Regional proximity also facilitates the flow of managers and industry experts, which makes it easier for local firms to tap into foreign knowledge about the industry.

Shared social networks also explain local firms' differential access to global buyers and their ability to create long-term buyer–supplier relationships. As Morris, Plank, and Staritz (2016) and Morris and Staritz (2014) show, European diaspora-owned firms in Mauritius and Madagascar used cultural and linguistic ties to create close relations to European buyers and to maintain them in times of crisis. Smith et al. (2016) also emphasize that ownership matters for the resources that firms can draw on for upgrading, showing that joint ventures firms in the Slovakian apparel industry were more successful due to close relations with European buyers through their European partner, in contrast to fully locally owned firms that lacked such *relational market proximity*. Besides social networks, buyers' strategic corporate interests can also lead to a more proactive role in supporting local supplier firms to build their capabilities. Pietrobelli and Rabellotti (2011) argue that lead firms support local firm learning when there is relational governance, drawing on the five fold governance typology proposed in

⁵ We use the term *diaspora* to describe local investors who do not originate from the country where they are living, but consider themselves local. They may or may not have citizenship depending on political factors in the host country. The term *diaspora* signals that they are part of another country or group of people, other than their home country, with which they share a common culture.

Gereffi, Humphrey, and Sturgeon (2005). The relational governance ideal type is defined by high complexity of transactions, low ability to codify transactions, and high capabilities of suppliers, which results in lead firms and supplier firms building capabilities in tandem. We argue, however, that forms of relational governance can also emerge where supplier firms have low capabilities, but where buyers have a strategic interest in creating new supplier firms or where suppliers possess unique assets, which Sako and Zylberberg (2019) refer to as specialized complementary assets. Besides these specific cases, the support of global buyers in learning has generally declined as the number of capable suppliers has increased globally (see also Schmitz and Knorringer 2010). Hence, we argue that global buyers support new local supplier firms when they have an interest to increase the number of supplier firms generally or for specific types of products characterized by less competition and limited supplier capabilities.

Finally, local supplier firms' resources and whether they leverage these resources to invest in building their capabilities, as well as the outcomes of such investments, also depend on national policies (Lall 1996; Pietrobelli 1998). At the beginning of developing new export industries, there generally exist only rudimentary national or industry-specific innovation systems, since such systems are the outcome of sector development and initiatives by firms and other private and public actors. Instead, local firms often face infrastructure deficiencies, high labor turnover, and foreign exchange scarcity, which negatively affect their incentives to invest in, and the outcomes of, learning efforts. Government industrial policies can increase the resources that local firms have to draw upon and thus reduce the risk and cost of investing in learning. However, local firms may not use these resources provided for investments in learning (learning rents) to search for and adopt new knowledge and put in effort to create new ways of doing things, but rather maintain existing routines, what the TC literature calls satisficing behavior (Helfat 2018). Thus, governments have to support and compel learning through reciprocal control mechanisms (Amsden 2001).

Technological Capabilities in the Apparel and Floriculture GVCs

We illustrate our approach for understanding how local firms build technological capabilities in GVCs using the apparel and floriculture sectors in key sub-Saharan African exporter countries. The two sectors are organized in buyer-driven GVCs characterized by decentralized production networks coordinated by lead firms that control activities such as design, branding, and marketing, and outsource all or most of the production process to suppliers (Gereffi 1999; Labaste 2005). Although buyers are not directly involved in production, the requirements and standards that they set determine the capabilities suppliers need to participate in specific value chain functions. We created technological capability matrices for the apparel and floriculture GVCs by identifying the main functions for each of these GVCs and the capabilities needed for these functions along the specific capability categories. We discerned which capabilities are needed using academic literature combined with our own industry insights based on extensive primary research.⁶ The apparel and floriculture technological capabilities matrices are included in the [online appendix](#).

⁶ On apparel, see Palpacuer, Gibbon, and Thomsen (2005), Abernathy, Volpe, and Weil (2006), Gereffi and Frederick (2010), and Staritz (2011). On floriculture, see Hughes (2000) Barrientos, Dolan, and Tallontire (2003), and Riisgaard (2011). In terms of our research, for the apparel sector this includes over ten years of fieldwork including interviews with global buyers in the EU and US, as well as with supplier firms, industry stakeholders and informants in supplier countries such as Bangladesh, Cambodia, Sri Lanka, and all top sub-Saharan African apparel exporting countries. For the floriculture

In the apparel sector, functions include assembly (or cut–make–trim, CMT) subcontracting for other firms based in the country, and then CMT where the firm has direct contact to buyers and carries out production according to the requirements of, and with the inputs provided by, buyers. In original equipment manufacturing (also called full package or free on board [FOB]), the firm is responsible for financing and sourcing the inputs, all production steps, finishing, and packaging, as well as arranging for the goods to be moved to a designated location for the buyer. Firms may then progress to original design manufacturing (ODM) where the firm also provides its own design functions to buyers and original brand manufacturing (OBM) where the firm also owns the brand (Gereffi 1999). Firms may also functionally upgrade to produce certain inputs in house, such as textile (fabric and/or yarn) but also accessories, trims, and packaging.

There is no general consensus on functions in the floriculture GVC literature. Many scholars have perceived upgrading as moving from the Dutch auction (where 60 percent of cut flowers are traded and sold to wholesalers or supermarkets) to direct sales (where buyers include traders, wholesalers, and supermarkets), which is generally described as requiring higher capabilities (Gebreyesus and Sonobe 2012).⁷ We acknowledge the importance of upgrading paths linked to sales channels, but we argue that the floriculture GVC can also be described in terms of a set of functions that supplier firms pursue, targeting various sales channels, and that these functions require different capabilities. Based on our industry knowledge and sector interviews, we identified four functions, which have a certain symmetry with the apparel sector. We call the first function grow and cut subcontracting (GC subcontracting) where firms grow and cut flowers according to the specifications of exporting firms based in the country. In grow, cut, and pack (GCP) the firm packs the flowers and exports directly to buyers in different end markets and sales channels. The next function is flower design and bouquet (FDB), which involves tailoring flower designs and bouquets, and delivering them to buyers. Lastly, firms can move into breeding new varieties (BNV), where firms sell their own varieties of flowers to buyers.

Fulfilling the minimum requirements to be able to enter GVCs at the subcontracting function requires investment, production process, and product capabilities that are challenging for many low-income country firms. Firms need to be able to produce and deliver according to the specifications of buyers in terms of price, quality, reliability, delivery time, flexibility, and compliance with safety, social, and environmental standards. The hiring and training of workers, as well as organizing workers, play an important role in labor-intensive activities such as apparel and floriculture. For direct exporting, firms also need end-market and linkages capabilities in terms of relationship to buyers and linkages to input suppliers as well as logistics, finance, and other support providers. Buyers often nominate global input suppliers, and hence using them requires developing transnational relations and import processes. For floriculture, this is the case not only for the direct sales channel but also for auction sales, since the Dutch auction has informal institutions with which local firms must interact (Melese 2017). Importantly, different end markets, and the buyers within them, have specific requirements in terms of functions as well as the depth of capabilities required within each capability

sector, this includes interviews with buyers and unpackers at the Dutch auction, an important sales channel for cut flowers, and fieldwork in Kenya and Ethiopia over the past five years.

⁷ See also literature cited in footnote 6.

category. Moving to ODM or FDB involves new production process and product capabilities, including design; product development; and often product diversification, which in turn requires new linkages capabilities. OBM or BNV necessitates also higher investment capabilities, advanced research, and product development, as well as new linkages and end-market capabilities.

Based on the GVC-specific technological capability matrices, we designed a survey questionnaire to capture data on the capabilities of supplier firms through the use of proxy indicators. Designing the survey questionnaire required making important choices about the best indicators. The [online appendix](#) explains which indicators were selected and why. The survey also included questions on the firm and owner's background as well as the firm's specific integration into GVCs and contextual factors at the sector and national level. We administered the survey through face-to-face interviews with firm owners and/or top managers, wherever possible at the factory, which allowed observing the factory set up, production processes, and products. The surveys were conducted with all local export firms in the Ethiopian apparel and floriculture sectors (twelve and eleven firms, respectively), and with the
204 majority of local export firms in the Madagascan apparel sector (twenty-three of thirty-two firms that we identified as local agreed to participate). In the Kenyan floriculture sector, we identified eighty-four cut-flower firms as local firms and then strategically selected a group of twenty-five firms for the survey, capturing firms with different ownership backgrounds and operating in different functions.

We measured firm-level capabilities through a scoring exercise that utilized a subset of the indicators from the survey questionnaire to construct a composite capability score.⁸ The [online appendix](#) explains the indicators selected and the scoring method, and provides examples of scoring from local firms in the four cases. The way our survey was designed (core quantitative and qualitative indicators and contextual questions), administered (face-to-face including factory visits and comparison with global industry standards and lower-income country context), and analyzed (trends within and among capability categories and additional buyer and institutional interviews) allows our measuring process to come close to the actual technological capabilities of local supplier firms.

Table 2 provides a sector-level overview showing the *average* technological capability scores of local firms operating at a particular function in each case (for examples of the individual firm scoring, see the [online appendix](#)). The Ethiopian apparel and floriculture export sectors contained a smaller number of local firms in 2017, compared to the Madagascar and Kenya cases. In Ethiopia, there were twelve local apparel export firms out of thirty-eight total export firms,⁹ and eleven local floriculture export firms out of eighty-two in total. In contrast, there were 32 local apparel export firms out of 68 in Madagascar, and 84 local floriculture export firms out of 103 in Kenya.

Capability-Building, Upgrading and Value Capture: Sub-Saharan African Apparel and Floriculture Firms

The four sub-Saharan African apparel and floriculture cases show that higher functions generally require higher capabilities but not consistently across all capability categories. There was also significant variation in scores among local supplier firms in

⁸ This approach generally follows the methods used in TC studies. See for example, Pietrobelli (1998); Figueiredo (2002); and Ernest, Ganiatsos, and Mytelka (1998).

⁹ This number only includes foreign firms that primarily exported.

Table 2

Average Local Apparel and Floriculture Export Firm Capabilities in Ethiopia, Kenya, and Madagascar*

Function	No. of Local Firms	Investment Capabilities	Product Capabilities	Production Capabilities	End Market Capabilities	Linkage Capabilities	No. of Local Firms	Investment Capabilities	Product Capabilities	Production Capabilities	End Market Capabilities	Linkage Capabilities
MADAGASCAR												
APPAREL	ETHIOPIA											
CMT-subcontracting							7					
CMT	6						2					
FOB	3						9					
FOB-textile							2					
ODM	3						3					
FLORICULTURE	ETHIOPIA						KENYA					
GC							2					
GCP	11						13					
FDB							8					
BNV							2					

Source: Authors.

* Light grey shading indicates low average capabilities across all firms operating in that function, darker grey shading indicates medium average capabilities, and the darkest grey shading indicates high average capabilities. The average score for each capability category was calculated based on the firm-level average per indicator.

each function, which indicates that firms had different export strategies in the same functions that required deepening capabilities to different degrees, or they executed the same export strategy with differing degrees of success. Local firms in the Madagascar and Kenya cases operated at all functions in the GVCs, indicating variation in building capabilities and functional upgrading, while in the Ethiopia cases, they generally operated only in the lowest functions. We explain these findings through summaries of the industry cases that draw out conceptual points about the processes of building capabilities and highlight the factors explaining variation in firms' capability-building, upgrading paths, and value capture trajectories within and across the industry cases. These factors are summarized in Table 3. This analysis is based on the local supplier firm survey data and interviews with representatives of industry associations, government agencies, and global buyers and buyer intermediaries.

206 In the Ethiopian apparel case, despite low wages, local firms generally failed to build the required capabilities to become competitive in producing basic products such as T-shirts and polo shirts. The three vertically integrated firms (FOB-textile) tried to produce T-shirts and basic cotton products using their own fabric. However, all local firms struggled to improve production capabilities and create the end-market and linkages capabilities required for exporting. As a result, they only exported a small proportion of their production, largely without making a profit, and diversified into the protected domestic market (where profits were higher and risks lower) but did not necessarily use the higher returns to invest in building capabilities, but rather engaged in satisficing behavior. Most of the six CMT firms struggled, given the low prices for basic CMT production. A few firms attempted to export on a FOB basis with imported fabric; however, all but one of them failed to build the linkage and production capabilities needed. They also faced constraints outside the firm due to scarce foreign exchange (in a national environment of capital controls) and long lead times due to underdeveloped logistics services. In general, only a handful of US and EU buyers sourced from Ethiopia, since these buyers had a specific Africa strategy and accepted longer lead times; nevertheless, even some of these buyers stopped sourcing from local firms, due to inconsistency in performance, and switched to the more recently emerging foreign firms.

Given the very limited manufacturing experience of the local owners of the Ethiopian apparel firms, there was a large gap between their initial capabilities and the capabilities required to become internationally competitive. Local pioneering firms, who started investing in the apparel export sector in mid- to late 2000s, did not know how large this gap was and how costly and risky it was to build the necessary capabilities, as illustrated by their low investment capabilities. Most firm owners indicated during the survey that they had poorly informed investment plans that led to making wrong decisions in terms of products, machines, and the size of their factories. The Ethiopian apparel case shows that developing even the basic capabilities needed to enter and remain in the lowest functions of GVCs can be a challenge for local firms in lower-income countries that have limited manufacturing experience and access to foreign tacit knowledge within the country. Foreign apparel exporting firms did not start investing in Ethiopia on a large scale until 2015, and there were limited linkages to and spillovers from the more mature Kenyan apparel export sector (see Whitfield, Staritz, and Morris *forthcoming*; Whitfield and Staritz *forthcoming*). While there were Ethiopian diaspora owners among the local firms—Ethiopians who had lived in the US or Italy, where they acquired citizenship—they did not have the kind of international networks that could be used to access knowledge and create linkages with global buyers and input suppliers.

Table 3**Factors Explaining Variation in Local Firms' Capability-Building**

	GVC Dynamics	Foreign Firms and Regional Context	National Industrial Policies	Local Supplier Firm Resources
Apparel				
<i>Ethiopia</i>	Some US and EU buyers with an Africa sourcing strategy.	Very few foreign firms in the period 2005–15. Very limited linkages to/spillovers from regional apparel exporting country.	Industrial policy incentivized local and foreign firm investments.* Protected domestic market.	Little manufacturing experience. Diaspora with no industry experience and limited social networks to buyers and foreign suppliers.
<i>Madagascar</i>	Local firms specialized in niche product segments based on relationships with buyers and specialized complementary assets. Smaller European buyers, especially from France.	Territorial and network embeddedness of Mauritian and French foreign firms. Regional proximity and linkages to/spillovers from Mauritius's mature apparel export industry.	No industrial policy; only creation of export processing zones.	European and Indian origin diaspora firms with networks and ability to access finance and knowledge. High-capability diaspora firms support indigenous Malagasy firms. Leveraged tradition of handiwork artisanal skills in the country.
Floriculture				
<i>Ethiopia</i>	Dutch auction minimum price. Dutch development assistance provided knowledge. Unpackers at the Dutch auction provided learning support.	Linkages between farm managers in foreign and local firms. Regional proximity and linkages to/spillovers from Kenya's mature floriculture export industry.	Industrial policy incentivized local and foreign firm investments. Creation of industry-specific facilities and airport infrastructure.	Limited production experience. Flower firms part of diversified business groups; focus on overall businesses and foreign exchange earnings.
<i>Kenya</i>	Dutch auction and Dutch development assistance provided knowledge. European buyers support in early stage of industry because interested in creating new suppliers.	Presence of foreign firms aided learning through spillovers such as imitation, foreign experts, developing local skilled labor. No regional mature floriculture export industry.	Industrial policy incentivized local and foreign firm investments in the early stage of the industry. Cofinanced industry-specific facilities and airport infrastructure, together with investors and development aid.	European and Indian-origin diaspora firms with networks and ability to access finance and knowledge. Black Kenyans use connections to political elite or foreign firms to leverage resources and contacts to buyers.

Source: Authors.

*Industrial policy to create apparel-specific industrial parks in which local firms could participate were not available until 2016, which is after the firm survey, and by 2020 there were very few local firms located in these parks.

Ethiopian-owned floriculture firms only exported on a GCP basis, but within the GCP function, firms pursued different export strategies in terms of sales channels and accessing high- or low-end markets, as shown in Table 4. In the direct sales channel,

Table 4*Export Strategies, Technological Capabilities, and Value Capture of Ethiopian-Owned Floriculture Firms*

Firms	Export Strategy	TC Score	Price*	Profit/Loss
E-Rose	Only Dutch auction deepening	MHMM (med-high)	5	profit
F-Rose	Only Dutch auction deepening	LMMM (med-minus)	4	profit
M-Rose	Only Dutch auction deepening	LLMM (low-med)	4	loss
G-Rose	Only direct sales to lower-end markets	LLLL (low)	NA	profit
D-Rose	Only direct sales to lower- and higher-end markets	LMMH (mixed)	3	profit
A-Rose	Largely Dutch auction but diversifying to lower- and higher-end markets through direct sales	MMMM (medium)	1	loss
L-Rose	Largely Dutch auction but diversifying to lower- and higher-end markets through direct sales	MMMM (medium)	3	breakeven
C-Rose	Largely Dutch auction but diversifying to lower- and higher-end markets through direct sales	LMMM (med-minus)	2	profit
K-Rose	Largely Dutch auction but diversifying to lower- and higher-end markets through direct sales	MHMM (med-high)	3	loss
J-Rose	Largely Dutch auction but diversifying to lower- and higher-end markets through direct sales	MMML (med-minus)	1	loss
B-Rose	Dutch auction and direct sales to low-end markets	LLLL (low)	1	loss

Source: Authors, based on firm survey scoring exercise and data collected from the Ethiopia Horticulture Development Association (EHDA).

* Buyers and unpackers at the Dutch auction scored firms from 1 to 5 (5 the highest) based on their average price obtained at the auction. There is no data for G-Rose, since it does not sell in the Dutch auction.

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firms can target high-end markets that have higher requirements, such as Western supermarkets, or they can target low-end markets that have lower requirements but not necessarily lower prices, such as emerging country markets. If exporting through the Dutch auction, firms need to meet minimum requirements but know that their products will be sold; however, they can capture higher prices at the auction by improving their quality and volume consistency, and in their presence in the auction (or reliability, as seen by buyers). This *Dutch auction deepening* export strategy requires that firms increase their product and production capabilities, as well as end-market capabilities, in order to develop relationships with unpackers. The survey responses indicate that unpackers provided feedback to Ethiopian-owned floriculture firms on how to improve their auction performance, but notably the local firms varied in their use of this knowledge. Most of the Ethiopian floriculture firms were part of family diversified business groups, where decisions regarding floriculture export strategies were made in relation not just to cost, risks, and rewards in the floriculture GVC but also to the broader business group interests. Thus, some firms only invested in building their capabilities to a certain level, since the main objective with the flower firm was to acquire foreign exchange for other businesses focused on the domestic market or to keep good relations with the government by investing in government priority sectors.

The Ethiopian floriculture case demonstrates the complex relationship between firms' export strategy, capability scores, and value capture. Firms that chose the Dutch auction deepening strategy achieved a higher price for their products at the Dutch auction compared to firms that chose to diversify sales channels and/or end markets. This outcome seems counterintuitive because firms pursuing a diversification strategy had the same or higher capabilities. The diversification export strategy requires firms to build or deepen several sets of capabilities in order to comply consistently with

the rules of different buyers, which could include increasing productivity, applying different production processes, expanding the farm size, introducing new varieties, and improving marketing skills. All of this has to be done while maintaining consistency at the Dutch auction in order to access higher prices. Firms struggled to fulfill these varying capabilities at the same time; as a result, they often chose to receive lower prices at the Dutch auction for not meeting all requirements, since they faced a lower penalty (just receive minimum price) than *failing* in the direct sales channel (where the order could be rejected). They chose the diversification strategy in order to lower risks that stemmed from depending solely on the Dutch auction, but that strategy came with new risks in relation to keeping consistency and building capabilities across sales channels.

Ethiopian-owned floriculture firms generally built higher capabilities than those in the apparel export sector. Part of the explanation lies in the local floriculture firms' use of foreign experts from the beginning, many of which came from neighboring Kenya. In the survey, all floriculture firms said that they began operations with foreign experts hired as consultants and/or managers in key positions. They had informed investment plans and used foreign experts to select their initial sales channel and flower varieties. In addition, floriculture firms used the knowledge provided through Dutch development assistance and from unpackers at the Dutch auction to improve their product and production capabilities. Linkages between farm managers at local and foreign flower firms were an important channel for knowledge transfer, but there were no strong linkages between foreign and local firms at the owner level. In the apparel case, the global apparel buyers sourcing from Ethiopia had no active role in supporting learning, and their strict requirements and low flexibility to accept mistakes made learning difficult. If apparel suppliers missed the lead times or failed to reach quality standards, they had very few chances to improve their performance and were quickly out of buyers' supply chains; whereas in the floriculture sector, the Dutch auction acts as a kind of *safety net* for firms, since it provides minimum prices. Government industrial policy was important in the two Ethiopian cases, playing a major role in incentivizing local investments by providing access to investment finance at below-market rates. However, the specific content of the industrial policy measures and the nonexistence of reciprocal control mechanisms meant that they were less successful in supporting and compelling local firms to invest in learning (Whitfield, Staritz, and Morris forthcoming).

In the Kenya floriculture case, firms participating in higher functions generally had higher capabilities, as shown in Table 5. However, within each function, firms demonstrated different export strategies, including strategies among GCP firms that were not seen in the Ethiopia case. Kenyan GCP firms used the direct sales channel in two ways. One group of GCP firms had lower capabilities; they produced summer flowers and were able to export only because traders were willing to buy relatively smaller quantities with lower quality and less frequently than required by the Dutch auction. These firms scored relatively high on end-market capabilities, since exporting through the direct sales channel required dealing with various buyers but scored lower in other capability categories. Another group of Kenyan GCP firms began exporting through direct sales from the beginning, as opposed to diversifying from the Dutch auction to direct sales as we saw in the Ethiopia case, because they expected direct sales to generate larger profits. However, these firms did not necessarily gain higher prices, since prices in direct sales generally follow auction prices. Nonetheless, they were able to capture higher value by exporting to low-end direct sales channels because they could bypass the investments in socioenvironmental standards required for the auction.

Table 5

Export Strategies and Average Technological Capabilities Scores of Kenyan-Owned Floriculture Firms

<i>TC Categories/ Functions</i>	<i>Export Strategy</i>	<i>Investment</i>	<i>Product</i>	<i>Production</i>	<i>End Market</i>	<i>Linkages</i>
GC subcontracting firms GCP firms	Subcontracting	Low	Low	Low	Low	Low
	Large volumes, mainly mainstream roses to Dutch auction	Medium-High	Medium	Medium-High	Medium	Low-Medium
	Small volumes, summer flowers through direct sales	Low-Medium	Medium	Medium	High	Low
FDB firms	Large volumes, tailor-made bouquets to Dutch auction	High	Medium	High	Medium-High	Medium
	Small volumes, unique rose varieties through direct sales	Medium-High	High	High	High	High
BNV firms	Large volumes, tailor-made bouquets and unique breeds of roses through direct sales	High	High	High	High	Medium-High

Source: Authors, based on firm survey scoring exercise.

Among the Kenyan FDB firms, one group of firms pursued a strategy of functional upgrading to tailor-made bouquets but also continued to sell standalone flowers and thus shifted all exports from the Dutch auction to large European supermarkets or wholesalers and traders. In contrast, the other group of FDB firms used the direct sales channel to reach niche markets for exclusive roses. These firms relied on building marketing skills and ensuring customer satisfaction with a higher number of florists and traders for florists across various regions. Moreover, these niche market FDB firms were dependent on close collaboration with European breeding firms in order to obtain exclusive rights for certain rose varieties. Both types of FDB firms captured higher value than GCP firms, due to higher prices for small exclusive roses and bouquets and to the ability of FDB firms to reduce production costs through economies of scale driven by larger farms and more specialized production. BNV firms performed similar tasks to FDB firms, but the additional breeding function is very complex and requires capital-intensive investments. The Kenyan BNV firms were still in the early stages of developing their capabilities and thus tended to have lower value capture, but the profit margins are expected to increase if they manage to become successful with using in-house breeding for the majority of their rose varieties.

The Kenyan floriculture industry demonstrates how export strategies and capability-building were linked to ownership characteristics, especially the role of diaspora firms. European foreign investors started the floriculture industry in Kenya in the 1970s; these pioneer investors prompted further investments by Europeans and by European diaspora in Kenya who already had firms in other agribusiness export sectors. The European diaspora investors imitated the foreign European firms and poached their managers. In the 1990s and 2000s, the industry experienced another wave of European investments, including European investors who settled in the country and took citizenship, and from the late 2000s, Indian diaspora investors that had horticulture export firms in Kenya diversified into floriculture (see Azizi 2020). European diaspora and Indian diaspora firms had experience and/or global networks through which they could connect to buyers and input suppliers. Local firms with indigenous (black) Kenyan owners lacked the resources of diaspora owners but were able to enter floriculture exports in two ways. There was a group of indigenous Kenyan firms with owners who had worked in foreign floriculture firms in Kenya and used their production knowledge and networks to start their own firms initially as subcontractors, since they did not have access to much financial capital, and then later exporting directly in the GCP function. In the second group of indigenous Kenyan, owners used their networks with ruling elites in the Kenyan government to access finance and then to buy production knowledge through hiring experienced foreign experts, who also brought with them connections to buyers and suppliers. Importantly, these resources helped this group of indigenous Kenyan firms to build the capabilities required for upgrading to FDB functions.

As was the case in the Ethiopian floriculture case, foreign experts played a key role as a channel of tacit knowledge for local firms in the early period of the floriculture industry development in Kenya. However, as the number of foreign and local firms increased, a significant pool of managers emerged within Kenya, and poaching managers from other firms became an alternative route for new local firms to access production knowledge. Also similar to the Ethiopian case, Dutch development assistance sought to increase the volume, quality, and social and environmental standards compliance of local firms in Kenya, which benefited the Dutch auction but was also an important source of knowledge for local firms. Industrial policy had a more limited role

in the Kenyan case than in the Ethiopian case but was important in facilitating the entry of politically connected black elites at the beginning of the industry's development.

European buyers played an active role in directly supporting learning and upgrading of local firms in Kenya, especially in the first decade of the industry's development, but they did not in Ethiopia. This difference is explained by the fact that European demand for cut flowers outstripped supply during the take-off of the Kenyan industry, while European demand fell after the global financial crisis in 2007–09, which was just a few years after Ethiopian flower firms had been established. The decline in European demand and increased demand from other regions led local firms in Kenya and Ethiopia to seek new regional markets and/or engage in product diversification. Instead of buyers, it was unpackers at the Dutch auction who helped Ethiopian floriculture firms in gaining knowledge. Unpackers had an interest in doing so because the unpackers worked on commission, which increased with the volume of flowers unpacked and processed, and Ethiopian firms did not have their own unpacking units at the Dutch auction in contrast to the Kenyan firms (see Melese 2017).

212 Similar to the Kenya floriculture case, local firms in the Madagascan apparel industry operated across all GVC functions, and there was a clear pattern in upgrading paths linked to ownership characteristics, in particular to diaspora-owned firms. However, foreign firms were more important as a means of leveraging knowledge than in the Kenya case. The apparel export industry in Madagascar emerged in the early 1990s, led by investments from French apparel firms and followed by Mauritian and Hong Kong investment (Cling, Rzafindrakoto, and Roubaud 2005).¹⁰ Owners of the French firms became part of the social networks of the European (largely French) diaspora and Indian origin investors in Madagascar due to shared ethnicity or citizenship. The Indian origin owners had French citizenship for historic reasons and thus were also able to use their social networks in France and relations with French apparel firms in Madagascar to gain connections to buyers and to access knowledge.¹¹ The regional investment strategies of Mauritian firms also led to close relations with European diaspora and Indian origin investors. The local firms with the highest capabilities in Madagascar were owned by European diaspora because of the resources that they could leverage. Some European diaspora owners had gained experience first working in Hong Kong firms or joint ventures with Mauritian investors, while others *bought* experience by initially taking in French partners or by buying an existing French apparel firm and retaining the managers and workers. Among local firms with medium capabilities, most of them had owners of Indian origin who were part of large families that owned diversified business groups, through which they could access financial capital.

Indigenous Malagasy owned the majority of the local firms with low capabilities and all of the CMT subcontracting firms. Indigenous Malagasy owners lacked the resources of the European diaspora and Indian origin owners, and thus they were able to access export markets only through two channels that resulted in specific export strategies. The first export strategy involved specializing in luxury children's clothes that entailed a large amount of handiwork, especially smock and embroidery, an artisanal skill that

¹⁰ Hong Kong investment had been central to the emergence of the apparel export industry in Mauritius, and both Mauritian and Hong Kong firms moved to Madagascar in response to rising wages in Mauritius and a new export processing zone law in Madagascar (see Whitfield and Staritz forthcoming).

¹¹ The former French colonial rulers granted French citizenship to Indian origin residents in Madagascar when it was uncertain whether they would receive Madagascan citizenship under the first independent government. Indians had migrated to Madagascar before and during French colonial rule.

Malagasy women had. These products were sold to small boutiques largely in France but also other European countries, the US, and Australia. Some firms even engaged in original design, selling their collections to buyers, but most of them produced in small volumes, shipped by air, and their factories looked more like artisanal workshops. Thus, the success of these firms hinged on turning Malagasy handicraft skills into what Sako and Zylberberg (2019) call specialized complementary assets. Children's clothes with handmade smock and embroidery could garner high prices, since Vietnam was the only other apparel supplier country that exported this kind of product. The second export strategy was to enter apparel exports through subcontracting. Some of the indigenous Malagasy owners had experience working in foreign firms before setting up their own firm, but they were not able to move into direct export unless they received explicit support from other high-capability local firms or had contacts to buyers gained when working in a foreign firm.

Some European buyers actively encouraged local investors in Madagascar to go into apparel exporting in the 1990s. These buyers had been sourcing particular products in Mauritius, such as children's clothes, and rising wages in Mauritius led these buyers to Madagascar to seek lower cost suppliers. The active buyer role provided local firms with secure orders and a certain amount of support in learning. However, it was also in the interest of the buyers, since more supplier firms increased their leverage to drive down prices, which according to survey responses, local firms began to experience later on. Less substitutability and thus less competition also benefited other local firms in Madagascar that specialized in luxury or niche products. These export strategies came with higher prices (though still asymmetric value capture) and closer relationships with buyers, resulting in relational governance. In contrast, the global apparel buyers that went to Ethiopia in the late 2000s were seeking a new low-cost sourcing location for the apparel products in highly competitive product segments, which came with low prices and arm's-length relations with buyers.

In each of the cases, local supplier firms pursued different export strategies, which required operating in different functions and deepening in various capability categories. Even when firms chose the same export strategy, they varied in their success with implementing it in terms of building the required capabilities to execute it profitably. The factors explaining different capability-building and functional upgrading of firms within each case, given the similar regional and national context, include variations in the resources that local firms could access and firm-level decisions regarding export strategies based on these resources. In the Madagascar apparel and Kenya floriculture cases, local firms varied in their ability to access finance, knowledge, and networks based on ownership characteristics. Firms owned by diaspora used their social networks to access finance and knowledge outside of the country as well as to create connections with specific global buyers and input suppliers and foreign firms in the country. However, factors external to firms increased the resources that firms could leverage when investing in building capabilities, and thus reduced the risk and uncertainty. Buyers and foreign firms were important, but their role varied across the cases. The global economic context (number of existing suppliers and level of global demand) and national and regional contextual factors determined the strategic interest of global buyers, the social networks of foreign and local firms and foreign firms' territorial embeddedness, and regional linkages to and spillovers from existing supplier countries. Industrial policy was important in the two Ethiopian cases in incentivizing local investments through access to finance but was less successful in increasing local firms' access to knowledge and networks.

Conclusion

The GVC and GPN approaches have developed key concepts to analyze economic globalization today and the outcomes for firms, sectors, and regions. They have stressed the importance of understanding interfirm governance and power relations focusing on lead firm strategies and the role of institutions at different scales in which firms are embedded. However, the GVC/GPN literature often underestimates the difficulties for local firms in new supplier countries to enter and remain in GVCs, especially in lower-income countries. At the same time, the literature critical of the ability of GVC participation to drive development often downplays the importance of local firms learning and building capabilities through participating in GVCs and the (though limited) room for maneuver to capture value, even in the context of asymmetric power relations and constrained agency. The approach that we advance focuses on the firm-level processes of building capabilities behind upgrading paths and value capture trajectories. It emphasizes the role of firm-level resources and related decisions on export strategies and capability-building in the context of specific national, regional, and global structures. Drawing on the GVC/GPN approaches and the TC literature, the article presented a reconceptualization of how local supplier firms build technological capabilities in the context of GVCs as well as a methodological approach for measuring and assessing capabilities at the firm level. This conceptual and methodological framework helps to explain why entering, upgrading, and capturing value in export sectors has been so difficult for local firms in sub-Saharan African countries. The article demonstrates how this framework can be applied using the cases of local supplier firms in the apparel and floriculture sectors in Ethiopia, Madagascar, and Kenya.

We showed that local supplier firms in the four cases had specific export strategies that resulted from firms' decisions about balancing the costs, risks, and rewards with the resources that they could leverage and within their broader business interests. Their export strategies in turn determined which capabilities firms invested in building. Within and across the cases, local firms pursued export strategies characterized by different degrees of functional upgrading and deepening along capability categories, and there were differences in their success with building capabilities. This variation is explained by the resources that local investors could access and leverage, most importantly capital, tacit knowledge, and social networks. Factors external to the firms, such as GVC dynamics, regional contexts, and national policies, shaped firm-level decisions regarding export strategies, as well as the learning channels that firms could leverage when investing in capability-building, and thus rewards, costs, and risks. While in our cases local investors typically had low resources initially, new local supplier firms increased their resources through relationships with global buyers that had an interest in creating new suppliers, through shared social networks with foreign firms (foreign investors in the country but also buyers and inputs suppliers), and through regional linkages to and spillovers from countries with mature industries. This article also advances our understanding of why and how the ownership characteristics of local and foreign firms matter by focusing on their implications for local firm capability-building, which in turn determines upgrading and value capture.

We argue that both intrafirm resources and extrafirm contextual factors related to GVC dynamics, foreign firms, regional context, and national industrial policies are important and interrelated. Migration patterns, geographic location, and historic industry and political economy developments shape ownership structures and the territorial and network embeddedness of foreign firms, and thus intrafirm resources. Therefore,

local supplier firms in lower-income countries not only have constrained agency in the context of asymmetric power relations in GVCs, but they also confront different opportunities and constraints when seeking to develop export strategies as a result of the varying resources upon which they can draw. In this respect, government industrial policy is important in increasing the resources that local firms can access in building capabilities and thus reducing related costs and risks. Industrial policy needs to provide not only access to investment finance but also access to knowledge and networks, which is a more challenging task.

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